

POTENTIAL REGIONAL ECONOMIC BENEFITS OF THE STRATEGIC PETROLEUM RESERVE EXPANSION PLANS

DRAFT REPORT

Prepared for

**U.S. Department of Energy
Petroleum Reserves**

RM: 3G-052
1000 Independence Avenue SW
Washington, DC 20585
202/586-6244
FAX 202/586-0835

Prepared by

**Sacramento Regional Research Institute,
A Joint Venture of SACTO and Sacramento State**

400 Capitol Mall, Suite 2500
Sacramento, CA 95814-4436
916/491-0444
FAX 916/441-2312

TABLE OF CONTENTS

	Page
TABLE OF CONTENTS	<i>ii</i>
SUMMARY	1
INTRODUCTION	3
Methodology	3
HATTIESBURG MSA ECONOMIC IMPACTS	5
PASCAGOULA MSA ECONOMIC IMPACTS	16
MCCOMB MSA ECONOMIC IMPACTS	24

Summary of the Potential Regional Economic Benefits of the Strategic Petroleum Reserve Expansion Plans

Each metropolitan statistical area (MSA) in Mississippi which has a facility included under the Strategic Petroleum Reserve expansion plan will gain direct economic benefits as well as indirect and induced benefits due to the ripple effect created by the plan's construction and operations phases.

Hattiesburg MSA Impacts

The Hattiesburg MSA (Forrest, Lamar, and Perry Counties) could experience the following benefits in its related construction and operations phases:

Richton Storage Site Construction:

- 1,200 jobs
- \$193 million of output
- \$82 million value added
- \$41 million employee compensation

Richton Storage Site Partial Capacity Operations

- 580 jobs
- \$104 million of output
- \$78 million value added
- \$29 million employee compensation

Richton Storage Site Full Capacity Operations:

- 250 jobs
- \$20 million of output
- \$14 million value added
- \$10 million employee compensation

Pascagoula MSA Impacts

The Pascagoula MSA (George and Jackson Counties) could see the following impacts in its related construction and operations phases:

Pascagoula Marine Terminal Construction:

- 230 jobs
- \$26 million of output
- \$11 million value added
- \$7 million employee compensation

Pascagoula Marine Terminal Partial & Full Capacity Operations:

- 80 jobs
- \$21 million of output
- \$8 million value added
- \$3 million employee compensation

McComb MSA Impacts

The McComb MSA (Amite and Pike Counties) could experience the following benefits in its related construction and operations phases:

Liberty Station Pipeline Terminal Construction:

- 200 jobs
- \$19 million of output
- \$8 million value added
- \$4 million employee compensation

Liberty Station Pipeline Terminal Partial & Full Capacity Operations:

- 80 jobs
- \$17 million of output
- \$6 million value added
- \$3 million employee compensation

Introduction

The Department of Energy's (DOE) Strategic Petroleum Reserve expansion plan involves three phases: 1.) facilities construction, 2.) partial capacity operations, and 3.) full capacity operations. In the first phase, three facilities, a storage site in Richton, Mississippi ("Richton"), one marine terminal near the City of Pascagoula ("Pascagoula"), and one pipeline terminal near Liberty, Mississippi ("Liberty Station") will be constructed primarily during the years 2010 through 2014. The facilities will be in partial capacity operations mode in the second phase from 2015 through 2019 and will begin full capacity operations by 2020 (third phase).

In order to determine the potential economic benefits associated with the Strategic Petroleum Reserve expansion plan, the DOE Petroleum Reserves program engaged the Sacramento Regional Research Institute (SRRI), a joint venture of the Sacramento Area Commerce and Trade Organization (SACTO) and California State University, Sacramento (Sacramento State), to conduct a high-level economic impact analysis of the construction, partial capacity operations, and full capacity operations of the facilities and supporting infrastructure under the plan. This report analyzes impacts at the metropolitan statistical area (MSA)¹ level (Hattiesburg, McComb, and Pascagoula) and relies on construction cost and operational employment estimates from DOE.

Methodology

The measurement of the economic impacts in this analysis was performed using an input-output model called IMPLAN, developed at the University of Minnesota specifically for use in regional analysis and currently distributed and supported by the Minnesota IMPLAN Group, Inc. This model is widely used for economic and fiscal analysis to quantify the full range of economic impacts. Input-output models, including IMPLAN, evaluate the effects of industries on each other based on the premise that industries use the outputs of other industries as inputs. Most typical measures of economic activity examine only the total output or employment of an industry, or the amount of final consumption demand provided by a given industry. The input-output model provides a much more comprehensive view of the inter-related economic impacts. Specifically, the construction of the facilities under the Strategic Petroleum Reserve expansion plan and their partial and full capacity economic activities directly create employment and purchases of goods and services within the Hattiesburg, McComb, and Pascagoula MSAs; however, economic benefits directly associated with the facilities' operations and the construction of the facilities and their supporting infrastructure do not end with these general activities—they also generate economic benefits in linked industries throughout their entire MSA.

¹ An MSA is characterized as a distinct economic region with unique economic trends and development patterns. These regions have the advantage of capturing the economic and social integration based around large population centers. Defined as an area that has at least one urbanized population area of 50,000 or more (plus the adjacent territory that has a high degree of integration with this core as measured by commuting ties), an MSA reflects a regional economic picture.

INTRODUCTION

The full range of economic impacts that result from the Strategic Petroleum Reserve expansion plan includes direct, indirect, and induced benefits:

- *Direct Benefits* consist of economic activity related exclusively to the facilities' operations or the construction of the facilities and their supporting infrastructure. This includes all expenditures made by the construction sectors and facilities and all employees who work directly for firms in the related sectors in the MSA.
- *Indirect Benefits* define the creation of additional economic activity that results from linked firms, suppliers of goods and services, and provision of operating inputs.
- *Induced Benefits* measure the consumption expenditures of direct and indirect sector employees. Examples of induced benefits include employees' expenditures on items such as retail purchases, housing, medical services, banking, and insurance.

In this analysis, the total direct, indirect, and induced benefits are presented in four ways:

- *Employment* demonstrates the number of jobs generated on an annual basis.
- *Output* accounts for total revenues including all sources of income or the value of production generated by an industry for a given time period. This is the best overall measure of business and economic activity because it is the measure most firms use to determine current activity levels.
- *Value Added* reflects the new value created by the industry, net of costs of inputs, and is approximately the wages, profits, and return to capital. Value Added consists of four components—employee compensation, proprietor income, other property income, and indirect business tax.
- *Employee Compensation* is a sub-set of Value Added and includes wages, salaries, benefits, and all other employer contributions. This measure shows how the employment levels convert to financial and fiscal potential.

Additionally, the input-output model is used to quantify the multiplier effect that occurs when new employment or output is added in the MSA. This numerical value illustrates the effect generated when new employment or output is added in one sector, but creates additional jobs or output in other sectors which supply goods and services (indirect impact) and consumer services to employees (induced impact).

Hattiesburg MSA Economic Impacts

The majority of the Strategic Petroleum Reserve expansion plan's development will be within the Hattiesburg MSA, which consists of Forrest, Lamar, and Perry Counties and includes the location of the Richton primary storage site.

Construction

Building the storage site will provide a short-term boost to the Hattiesburg MSA economy through the jobs and output supported by the construction of the facilities and related infrastructure (direct effect) as well as the suppliers of goods and services (indirect effect) and employee spending (induced effect). Drilling and well construction is also a major undertaking in this expansion plan at the regional level. The construction activities will ultimately produce a ripple effect in the MSA's economy; however, the associated direct economic effects will end once the construction is complete.

In order to quantify the full range of economic impacts of construction, including the direct, indirect, and induced effects, SRRI used cost estimates from the DOE Petroleum Reserves program to develop assumptions for construction activity which will primarily take place from 2010 through 2014. The annual average costs during this time period were calculated to determine the potential total annual economic impact of the expansion plans' construction on the Hattiesburg MSA.

Strategic Petroleum Reserve Expansion Construction Assumptions for the Hattiesburg MSA:

- The Richton underground storage site is to be constructed at an average cost of around \$44,010,000 annually from 2010 to 2014.
- Drilling and well construction is estimated at approximately \$63,120,000 per year on average from 2010 to 2014.
- Total construction labor costs are separated out from the costs outlined above. On average and spread through 2010 to 2014, these costs amount to approximately \$33,502,000 per year.

Overall, construction costs total around \$140,633,000 on an annual average basis during the 2010-2014 period, based on DOE cost estimates.

HATTIESBURG MSA IMPACTS

Construction of the facilities and supporting infrastructure in the Hattiesburg MSA, as planned under the Strategic Petroleum Reserve expansion, could generate a total of over 1,200 jobs and \$193 million of output in the MSA's economy as shown in Figure 1. Due to the ripple effect (indirect and induced impacts), the MSA could benefit from another 500 jobs and \$53 million of output in addition to the approximate 700 jobs and \$141 million of output directly supported by the Hattiesburg MSA Strategic Petroleum Reserve expansion construction activities. Additional economic benefits could result in the form of added value and employee compensation totaling \$82 million and \$41 million, respectively.

Potential short-term impacts of the Strategic Petroleum Reserve expansion construction on the Hattiesburg MSA's economy:

- ✓ **1,200 jobs**
- ✓ **\$193 million output**
- ✓ **\$82 million value added**
- ✓ **\$41 million employee compensation**

FIGURE 1
TOTAL ANNUAL AVERAGE ECONOMIC IMPACTS OF
FACILITIES CONSTRUCTION ON THE HATTIESBURG MSA

<i>Impact</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Employment	718	260	246	1,224
Output	\$140,633,136	\$29,014,834	\$23,636,898	\$193,284,868
Value Added	\$52,303,100	\$15,078,536	\$14,830,215	\$82,211,851
Employee Compensation	\$25,297,940	\$9,279,032	\$6,918,871	\$41,495,843

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

HATTIESBURG MSA IMPACTS

As shown in Figure 2, the Construction; Mining; and Retail Trade sectors could see the greatest employment impacts from the Hattiesburg MSA construction detailed under the Strategic Petroleum Reserve expansion plan, combined accounting for 66 percent of the total employment impacts. The MSA's Professional, Scientific & Technical Services; Transportation & Warehousing; and Management of Companies sectors could experience the greatest indirect employment impacts due to their role as linked suppliers of goods and services for the expansion construction activities. The largest induced benefits could be seen in the Retail Trade; Health & Social Services; and Accommodation & Food Services sectors as a result of the direct and indirect employees' spending patterns.

FIGURE 2
MAJOR SECTOR ANNUAL AVERAGE EMPLOYMENT IMPACTS
FROM FACILITIES CONSTRUCTION ON THE HATTIESBURG MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Construction	600	3	2	604	49.4%
Mining	118	0	0	119	9.7%
Retail Trade	0	21	62	84	6.8%
Professional, Scientific & Technical Services	0	72	8	80	6.6%
Accommodation & Food Services	0	6	41	47	3.9%
Health & Social Services	0	0	42	42	3.4%
Other Services	0	9	29	38	3.1%
Wholesale Trade	0	23	10	33	2.7%
Transportation & Warehousing	0	26	6	32	2.6%
Administrative & Waste Services	0	22	6	28	2.3%
Management of Companies	0	25	1	26	2.1%
Finance & Insurance	0	16	10	26	2.1%
Arts, Entertainment & Recreation	0	9	6	15	1.2%
Real Estate & Rental	0	8	5	13	1.1%
Manufacturing	0	9	4	12	1.0%
Information	0	6	3	9	0.7%
Educational Services	0	0	6	6	0.5%
Utilities	0	2	3	5	0.4%
Government	0	2	3	5	0.4%
Agriculture, Forestry, Fishing & Hunting	0	0	1	1	0.1%
Total	718	260	246	1,224	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

HATTIESBURG MSA IMPACTS

As shown in Figure 3, the Mining; Construction; and Professional, Scientific, & Technical Services sectors could see the largest output impacts from construction of the Richton storage facility and supporting infrastructure. Combined, these three sectors account for 77 percent of the total output impacts. The Professional, Scientific, & Technical Services; Management of Companies; and Transportation & Warehousing sectors could experience the greatest indirect output impacts due to their role as providers of goods and services supporting the construction activities. The largest induced output impacts resulting from the consumption activities of the direct and indirect sector employees could be seen in the Hattiesburg MSA's Government; Retail Trade; and Health & Social Services sectors.

FIGURE 3
MAJOR SECTOR ANNUAL AVERAGE OUTPUT IMPACTS FROM FACILITIES
CONSTRUCTION ON THE HATTIESBURG MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Mining	\$74,330,304	\$179,980	\$58,250	\$74,568,534	38.6%
Construction	\$66,302,832	\$287,931	\$144,011	\$66,734,774	34.5%
Professional, Scientific & Technical Services	\$0	\$7,151,341	\$690,456	\$7,841,797	4.1%
Retail Trade	\$0	\$1,331,721	\$3,842,061	\$5,173,782	2.7%
Government	\$0	\$386,357	\$4,719,035	\$5,105,392	2.6%
Wholesale Trade	\$0	\$2,931,120	\$1,316,428	\$4,247,548	2.2%
Management of Companies	\$0	\$3,768,554	\$154,447	\$3,923,001	2.0%
Finance & Insurance	\$0	\$2,203,117	\$1,547,471	\$3,750,588	1.9%
Transportation & Warehousing	\$0	\$2,998,830	\$594,321	\$3,593,151	1.9%
Health & Social Services	\$0	\$610	\$3,537,115	\$3,537,725	1.8%
Manufacturing	\$0	\$2,228,804	\$974,392	\$3,203,196	1.7%
Real Estate & Rental	\$0	\$1,483,612	\$751,153	\$2,234,765	1.2%
Accommodation & Food Services	\$0	\$283,959	\$1,835,343	\$2,119,302	1.1%
Information	\$0	\$1,223,175	\$694,695	\$1,917,870	1.0%
Utilities	\$0	\$675,499	\$919,412	\$1,594,911	0.8%
Other Services	\$0	\$601,216	\$929,201	\$1,530,417	0.8%
Administrative & Waste Services	\$0	\$771,276	\$248,846	\$1,020,122	0.5%
Arts, Entertainment & Recreation	\$0	\$438,800	\$318,857	\$757,657	0.4%
Educational Services	\$0	\$12,330	\$263,240	\$275,570	0.1%
Agriculture, Forestry, Fishing & Hunting	\$0	\$56,602	\$98,164	\$154,766	0.1%
Total	\$140,633,136	\$29,014,834	\$23,636,898	\$193,284,868	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Partial Capacity Operations

The Richton storage facility will bring direct economic benefits to the Hattiesburg MSA economy through the people employed at the location to support its partial capacity operations once construction is near completion (according to DOE, this will be within the time period from 2015 to 2019). The economic impacts, however, do not end with the direct effects—the facility will also produce a ripple effect in the MSA’s economy as a result of the linkages that occur between its activities, suppliers of goods and services (indirect effect), and employee spending (induced effect). Using DOE estimates, SRRI calculated annual average full-time equivalent (FTE) employment and power costs for leaching activities at the Richton facility located within the Hattiesburg MSA from 2015 to 2019 to determine the potential economic impacts of the facilities’ partial capacity operations.

Strategic Petroleum Reserve Expansion Partial Capacity Operations Assumptions for the Hattiesburg MSA:

- The Richton facility, on average, will have a total of around 240 people employed per year from 2015 to 2019 in management, ES&H, operations, maintenance, engineering, and security.
- An annual average of nearly \$79 million dollars is allocated to power costs attributable to leaching activities at the Richton facility from 2015 to 2019.

Overall, as shown in Figure 4 (on the following page), the Richton facility in its partial capacity operations stage (from 2015 to 2019) could contribute about 580 jobs and \$104 million of output to the Hattiesburg MSA’s economy on an annual basis including direct, indirect, and induced benefits. Accounting for leakages out of the MSA’s economy, the facility directly supports about 380 jobs and nearly \$83 million of output, but due to the indirect and induced benefits, the Hattiesburg MSA could gain an additional 200 jobs and approximate \$21 million of output. The multiplier effect shows that, on average, for every employee or dollar of output the Richton facility supports in the Hattiesburg MSA as a result of its partial capacity operations, the MSA’s economy could gain an additional 0.5 jobs or 30 cents, respectively.

Potential impacts of Strategic Petroleum Reserve expansion partial capacity operations on the Hattiesburg MSA’s economy:

- ✓ **580 jobs**
- ✓ **\$104 million output**
- ✓ **\$78 million value added**
- ✓ **\$29 million employee compensation**

HATTIESBURG MSA IMPACTS

FIGURE 4
TOTAL ANNUAL AVERAGE ECONOMIC IMPACTS
OF PARTIAL CAPACITY OPERATIONS ON THE
HATTIESBURG MSA

<i>Impact</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Employment	377	54	148	579
Output	\$82,803,245	\$6,636,082	\$14,199,664	\$103,638,991
Value Added	\$65,138,617	\$3,639,094	\$8,909,891	\$77,687,602
Employee Compensation	\$23,212,804	\$1,735,780	\$4,155,801	\$29,104,385

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Additionally, partial capacity operations of the Richton facility could generate about \$78 million in total added value (including direct, indirect, and induced effects), reflecting the amount of output produced over and above the cost of inputs. Approximately \$29 million in total employee compensation (including salary and benefits) could also result from the direct, indirect, and induced impacts of the facility's partial capacity operations on an annual basis—equating to about \$50,000 per employee, which ultimately affects spending, investment, and savings patterns.

HATTIESBURG MSA IMPACTS

As shown in Figure 5, the Hattiesburg MSA's Utilities; Transportation & Warehousing; and Retail Trade sectors could benefit the most from the total employment impacts produced by the partial capacity operations of the Richton facility in the expansion plan. These sectors account for over 69 percent of the total employment impacts. The Construction; Administrative & Waste Services; and Professional, Scientific & Technical Services sectors could experience the largest indirect job gains as a result of their role as linked and service-providing sectors to the Richton petroleum reserve facility. The largest induced impacts could be generated in the Retail Trade; Health & Social Services; and Accommodation & Food Services sectors due to the direct and indirect employees' consumption activities.

FIGURE 5
MAJOR SECTOR ANNUAL AVERAGE EMPLOYMENT IMPACTS FROM
PARTIAL CAPACITY OPERATIONS ON THE HATTIESBURG MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Utilities	193	1	2	196	33.9%
Transportation & Warehousing	157	6	3	167	28.8%
Retail Trade	0	1	37	39	6.7%
Professional, Scientific & Technical Services	18	9	5	31	5.4%
Accommodation & Food Services	0	5	25	29	5.0%
Health & Social Services	0	0	25	25	4.3%
Other Services	0	1	17	19	3.2%
Administrative & Waste Services	0	9	4	13	2.2%
Government	8	1	2	11	1.8%
Construction	0	9	1	10	1.8%
Finance & Insurance	0	2	6	8	1.5%
Wholesale Trade	0	2	6	8	1.3%
Real Estate & Rental	0	3	3	6	1.0%
Educational Services	0	1	3	4	0.7%
Arts, Entertainment & Recreation	0	0	3	4	0.6%
Mining	0	3	0	3	0.5%
Manufacturing	0	1	2	3	0.5%
Information	0	1	2	3	0.5%
Management of Companies	0	0	1	1	0.1%
Agriculture, Forestry, Fishing & Hunting	0	0	1	1	0.1%
Total	377	54	148	579	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

HATTIESBURG MSA IMPACTS

Figure 6 shows that the Utilities; Transportation & Warehousing; and Government sectors could account for about 83 percent of the Hattiesburg MSA's total output impacts resulting from the Richton facility's partial capacity operations. The largest indirect gains could be seen in the Transportation & Warehousing; Mining; and Professional, Scientific & Technical Services sectors because of their linkages to the facility's activities. Government; Retail Trade; and Health & Social Services could see the greatest induced output benefits, demonstrating the demand for goods and services from these sectors that are generated by spending activity from the direct and indirect sector employees.

FIGURE 6
MAJOR SECTOR ANNUAL AVERAGE OUTPUT IMPACTS FROM PARTIAL
CAPACITY OPERATIONS ON THE HATTIESBURG MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Utilities	\$65,307,740	\$294,396	\$551,717	\$66,153,853	63.8%
Transportation & Warehousing	\$12,999,766	\$1,455,470	\$357,010	\$14,812,246	14.3%
Government	\$2,369,015	\$147,911	\$2,837,738	\$5,354,664	5.2%
Professional, Scientific & Technical Services	\$2,126,661	\$797,008	\$414,708	\$3,338,377	3.2%
Retail Trade	\$0	\$66,311	\$2,307,472	\$2,373,783	2.3%
Health & Social Services	\$0	\$88	\$2,124,600	\$2,124,688	2.1%
Accommodation & Food Services	\$0	\$202,321	\$1,102,792	\$1,305,113	1.3%
Mining	\$0	\$1,252,157	\$34,967	\$1,287,124	1.2%
Finance & Insurance	\$0	\$334,939	\$929,381	\$1,264,320	1.2%
Wholesale Trade	\$0	\$210,548	\$790,452	\$1,001,000	1.0%
Real Estate & Rental	\$0	\$456,954	\$450,590	\$907,544	0.9%
Manufacturing	\$0	\$117,601	\$584,927	\$702,528	0.7%
Construction	\$0	\$601,574	\$86,508	\$688,082	0.7%
Information	\$0	\$224,022	\$417,094	\$641,116	0.6%
Other Services	\$0	\$72,360	\$558,478	\$630,838	0.6%
Administrative & Waste Services	\$63	\$325,922	\$149,485	\$475,470	0.5%
Arts, Entertainment & Recreation	\$0	\$9,992	\$191,716	\$201,708	0.2%
Educational Services	\$0	\$27,074	\$158,342	\$185,416	0.2%
Management of Companies	\$0	\$31,796	\$92,754	\$124,550	0.1%
Agriculture, Forestry, Fishing & Hunting	\$0	\$7,638	\$58,933	\$66,571	0.1%
Total	\$82,803,245	\$6,636,082	\$14,199,664	\$103,638,991	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Full Capacity Operations

The Richton storage site under the expansion plan is anticipated to be complete starting in 2020 when employment levels will shift to meet the needs of a fully operational facility. Similar to the impacts of the facility's partial capacity operations, the Hattiesburg MSA will gain direct economic benefits as well as indirect and induced benefits due to the ripple effect created by the full capacity operations of the Richton facility. SRRI used annual average full-time equivalent (FTE) employment estimates, based on DOE figures, for the Richton facility from 2020 through 2021 to determine the potential economic impacts of its full capacity operations on a yearly basis.

Strategic Petroleum Reserve Expansion Full Capacity Operations Assumptions for the Hattiesburg MSA:

- The Richton facility, on average, will have a total of around 184 people employed per year, based on 2020 to 2021 estimates, in management, ES&H, operations, maintenance, engineering, and security.

Figure 7 shows that, once fully operational, the Richton petroleum reserve storage facility could contribute about 250 jobs and around \$20 million in output to the Hattiesburg MSA's economy on an annual basis including direct, indirect, and induced benefits. In addition to the approximate 180 jobs and \$14 million of output directly supported by the Richton facility's full capacity operations, the MSA could benefit from about another approximate 70 jobs and \$6 million in output resulting from indirect and induced impacts. The multiplier effect shows that, on average, for every employee or dollar of output the facility directly generates in the Hattiesburg MSA as a result of its full capacity operations, the economy could gain an additional 0.4 jobs or 50 cents, respectively.

Potential impacts of Strategic Petroleum Reserve expansion full capacity operations on the Hattiesburg MSA's economy:

- ✓ 250 jobs
- ✓ \$20 million output
- ✓ \$14 million value added
- ✓ \$10 million employee compensation

FIGURE 7
TOTAL ANNUAL AVERAGE ECONOMIC IMPACTS OF FULL CAPACITY OPERATIONS ON THE HATTIESBURG MSA

<i>Impact</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Employment	184	18	49	251
Output	\$13,517,740	\$1,674,787	\$4,702,886	\$19,895,413
Value Added	\$9,702,559	\$945,154	\$2,950,927	\$13,598,640
Employee Compensation	\$7,768,993	\$485,875	\$1,376,391	\$9,631,259

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

HATTIESBURG MSA IMPACTS

Moreover, the full capacity operations of the Richton facility could also generate about \$14 million in total added value (including direct, indirect, and induced effect), reflecting the amount of output produced over and above the cost of inputs. The Hattiesburg MSA could also see a total benefit of nearly \$10 million in total employee compensation (including salary and benefits) which equates to about \$38,000 per employee and indirectly affects spending, investment, and savings patterns.

Figure 8 shows that the Hattiesburg MSA's Transportation & Warehousing; Administrative & Waste Services; and Professional, Scientific & Technical Services sectors could benefit the most from the total employment impacts produced by the full capacity operations of the Richton facility in the Strategic Petroleum Reserve expansion plan. Together, these three sectors account for approximately 79 percent of the total employment impacts produced by the facility. The largest indirect job gains could be generated in the Administrative & Waste Services; Professional, Scientific & Technical Services; and Real Estate & Rental sectors as a result of their role as linked and service-providing sectors to the facility. The MSA's Retail Trade; Health & Social Services; and Accommodation & Food Services sectors could experience the largest induced impacts due to the direct and indirect employees' consumption activities.

FIGURE 8
MAJOR SECTOR ANNUAL AVERAGE EMPLOYMENT IMPACTS
FROM FULL CAPACITY OPERATIONS ON THE HATTIESBURG MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Transportation & Warehousing	129	1	1	131	52.3%
Administrative & Waste Services	40	6	1	47	18.7%
Professional, Scientific & Technical Services	15	3	2	20	7.9%
Retail Trade	0	1	12	13	5.1%
Accommodation & Food Services	0	1	8	10	3.8%
Health & Social Services	0	0	8	8	3.3%
Other Services	0	1	6	6	2.5%
Finance & Insurance	0	1	2	3	1.1%
Real Estate & Rental	0	2	1	3	1.0%
Wholesale Trade	0	1	2	3	1.0%
Educational Services	0	0	1	1	0.5%
Arts, Entertainment & Recreation	0	0	1	1	0.5%
Utilities	0	1	1	1	0.5%
Information	0	1	1	1	0.5%
Construction	0	1	0	1	0.4%
Manufacturing	0	0	1	1	0.4%
Government	0	0	1	1	0.3%
Management of Companies	0	0	0	0	0.1%
Agriculture, Forestry, Fishing & Hunting	0	0	0	0	0.1%
Mining	0	0	0	0	0.0%
Total	184	18	49	251	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

HATTIESBURG MSA IMPACTS

As shown in Figure 9, the Transportation & Warehousing; Professional, Scientific & Technical Services; and Administrative & Waste Services sectors could account for about 72 percent of the MSA's total output impacts resulting from the full capacity operations of the Richton petroleum reserve facility. Professional, Scientific & Technical Services; Real Estate & Rental; and Administrative & Waste Services could experience the largest indirect output gains because of their linkages to the facility's activities. The greatest induced output benefits could be seen in the Government; Retail Trade; and Health & Social Services sectors, demonstrating the demand for goods and services from these sectors that are generated by spending activity from the direct and indirect sector employees.

FIGURE 9
MAJOR SECTOR ANNUAL AVERAGE OUTPUT IMPACTS FROM
FULL CAPACITY OPERATIONS ON THE HATTIESBURG MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Transportation & Warehousing	\$10,681,336	\$101,659	\$118,241	\$10,901,236	54.8%
Professional, Scientific & Technical Services	\$1,783,731	\$289,049	\$137,350	\$2,210,130	11.1%
Administrative & Waste Services	\$1,052,673	\$193,905	\$49,509	\$1,296,087	6.5%
Government	\$0	\$47,223	\$939,846	\$987,069	5.0%
Retail Trade	\$0	\$32,023	\$764,229	\$796,252	4.0%
Health & Social Services	\$0	\$39	\$703,662	\$703,701	3.5%
Accommodation & Food Services	\$0	\$63,304	\$365,241	\$428,545	2.2%
Real Estate & Rental	\$0	\$271,321	\$149,235	\$420,556	2.1%
Finance & Insurance	\$0	\$112,744	\$307,809	\$420,553	2.1%
Utilities	\$0	\$191,427	\$182,726	\$374,153	1.9%
Wholesale Trade	\$0	\$61,824	\$261,796	\$323,620	1.6%
Information	\$0	\$135,818	\$138,141	\$273,959	1.4%
Manufacturing	\$0	\$25,893	\$193,727	\$219,620	1.1%
Other Services	\$0	\$33,559	\$184,966	\$218,525	1.1%
Construction	\$0	\$70,741	\$28,651	\$99,392	0.5%
Arts, Entertainment & Recreation	\$0	\$5,407	\$63,496	\$68,903	0.3%
Educational Services	\$0	\$2,919	\$52,442	\$55,361	0.3%
Management of Companies	\$0	\$21,491	\$30,720	\$52,211	0.3%
Mining	\$0	\$12,834	\$11,581	\$24,415	0.1%
Agriculture, Forestry, Fishing & Hunting	\$0	\$1,607	\$19,518	\$21,125	0.1%
Total	\$13,517,740	\$1,674,787	\$4,702,886	\$19,895,413	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Pascagoula MSA Economic Impacts

The Strategic Petroleum Reserve expansion plan includes the construction and operation of a marine terminal located within the Pascagoula MSA, an area consisting of George and Jackson Counties.

Construction

Building the Pascagoula marine terminal will provide a short-term boost to the Pascagoula MSA economy through the jobs and output supported by its construction (direct effect) as well as its suppliers of goods and services (indirect effect) and employee spending (induced effect). The construction activities will ultimately produce a ripple effect in the MSA's economy; however, the associated direct economic effects will end once the construction is complete.

In order to quantify the full range of economic impacts of construction, including the direct, indirect, and induced effects, SRRI used cost estimates from the DOE Petroleum Reserves program to develop assumptions for the marine terminal construction activity, which will primarily take place from 2010 through 2014. The annual average costs during this time period were calculated to determine the potential total annual economic impact of the expansion plans' construction on the Pascagoula MSA economy.

Strategic Petroleum Reserve Expansion Construction Assumptions for the Pascagoula MSA:

- The Pascagoula marine terminal is estimated to have an annual average construction cost of \$7,484,000 from 2010 to 2014.
- Total construction labor costs are separated out from the costs outlined above. On average and spread through 2010 to 2014, total construction labor costs for the Pascagoula terminal amount to approximately \$11,022,000 per year.

Overall, construction costs total around \$18,506,000 on an annual average basis during the 2010-2014 period, based on DOE cost estimates.

PASCAGOULA MSA IMPACTS

Construction of the marine terminal in the Pascagoula MSA could generate a total of over 230 jobs and \$26 million of output in the MSA's economy as shown in Figure 10. Indirect and induced impacts of the terminal's direct activity could create another 60 jobs and \$7 million of output in the MSA's economy in addition to the 170 jobs and \$19 million of output directly supported by the Pascagoula Strategic Petroleum Reserve expansion construction activities. Additional economic benefits could result in the form of added value and employee compensation totaling \$11 million and \$7 million, respectively.

Potential short-term impacts of the Strategic Petroleum Reserve expansion construction on the Pascagoula MSA's economy:

- ✓ **230 jobs**
- ✓ **\$26 million output**
- ✓ **\$11 million value added**
- ✓ **\$7 million employee compensation**

FIGURE 10
TOTAL ANNUAL AVERAGE ECONOMIC IMPACTS OF
FACILITIES CONSTRUCTION ON THE PASCAGOULA MSA

<i>Impact</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Employment	170	30	33	233
Output	\$18,506,050	\$4,116,796	\$3,328,332	\$25,951,178
Value Added	\$7,672,163	\$1,575,143	\$2,091,694	\$11,339,000
Employee Compensation	\$4,697,583	\$961,691	\$860,007	\$6,519,281

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

PASCAGOULA MSA IMPACTS

The Pascagoula MSA's Construction; Professional, Scientific & Technical Services; and Retail Trade sectors, as presented in Figure 11, could see the greatest employment impacts from the marine terminal construction detailed under the Strategic Petroleum Reserve expansion plan. These sectors combined could account for approximately 85 percent of the total employment impacts. The Professional, Scientific & Technical Services; Retail Trade; and Administrative & Waste Services sectors could experience the greatest indirect employment impacts due to their role as linked suppliers of goods and services for the expansion construction activities while the largest induced benefits could be seen in the Retail Trade; Accommodation & Food Services; and Health & Social Services sectors as a result of the direct and indirect employees' spending patterns.

FIGURE 11
MAJOR SECTOR ANNUAL AVERAGE EMPLOYMENT IMPACTS
FROM FACILITIES CONSTRUCTION ON THE PASCAGOULA MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Construction	170	0	0	171	73.2%
Professional, Scientific & Technical Services	0	13	1	14	6.1%
Retail Trade	0	4	9	12	5.2%
Accommodation & Food Services	0	1	6	7	3.1%
Health & Social Services	0	0	6	6	2.5%
Other Services	0	2	3	5	2.1%
Administrative & Waste Services	0	3	1	3	1.3%
Transportation & Warehousing	0	2	1	3	1.3%
Real Estate & Rental	0	2	1	3	1.2%
Finance & Insurance	0	1	1	3	1.2%
Government	0	0	1	1	0.6%
Manufacturing	0	1	0	1	0.5%
Wholesale Trade	0	1	0	1	0.4%
Information	0	1	1	1	0.4%
Educational Services	0	0	1	1	0.3%
Utilities	0	0	0	1	0.2%
Arts, Entertainment & Recreation	0	0	0	1	0.2%
Agriculture, Forestry, Fishing & Hunting	0	0	0	0	0.2%
Mining	0	0	0	0	0.0%
Management of Companies	0	0	0	0	0.0%
Total	170	30	33	233	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

PASCAGOULA MSA IMPACTS

Figure 12 shows that the Construction; Manufacturing; and Professional, Scientific & Technical Services sectors could account for about 83 percent of total output impacts from the Pascagoula marine terminal construction. Due to their role as providers of goods and services supporting the construction activities, the largest indirect gains could be seen in the Pascagoula's MSA's Professional, Scientific, & Technical Services; Manufacturing; and Real Estate & Rental sectors. Government; Retail Trade; and Health & Social Services could experience the largest induced output impacts resulting from the consumption activities of the direct and indirect sector employees.

FIGURE 12
MAJOR SECTOR ANNUAL AVERAGE OUTPUT IMPACTS FROM FACILITIES
CONSTRUCTION ON THE PASCAGOULA MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Construction	\$18,506,050	\$41,125	\$22,917	\$18,570,092	71.6%
Manufacturing	\$0	\$1,279,736	\$180,273	\$1,460,009	5.6%
Professional, Scientific & Technical Services	\$0	\$1,338,396	\$95,669	\$1,434,065	5.5%
Government	\$0	\$40,523	\$841,834	\$882,357	3.4%
Retail Trade	\$0	\$219,562	\$542,042	\$761,604	2.9%
Health & Social Services	\$0	\$33	\$427,146	\$427,179	1.6%
Finance & Insurance	\$0	\$191,699	\$233,422	\$425,121	1.6%
Real Estate & Rental	\$0	\$237,566	\$141,356	\$378,922	1.5%
Accommodation & Food Services	\$0	\$48,517	\$306,701	\$355,218	1.4%
Transportation & Warehousing	\$0	\$210,193	\$67,191	\$277,384	1.1%
Other Services	\$0	\$134,742	\$123,551	\$258,293	1.0%
Information	\$0	\$112,860	\$99,395	\$212,255	0.8%
Utilities	\$0	\$42,701	\$116,297	\$158,998	0.6%
Administrative & Waste Services	\$0	\$125,477	\$30,143	\$155,620	0.6%
Wholesale Trade	\$0	\$75,752	\$43,497	\$119,249	0.5%
Agriculture, Forestry, Fishing & Hunting	\$0	\$8,130	\$15,040	\$23,170	0.1%
Arts, Entertainment & Recreation	\$0	\$1,722	\$19,359	\$21,081	0.1%
Educational Services	\$0	\$134	\$18,831	\$18,965	0.1%
Management of Companies	\$0	\$5,295	\$3,292	\$8,587	0.0%
Mining	\$0	\$2,633	\$376	\$3,009	0.0%
Total	\$18,506,050	\$4,116,796	\$3,328,332	\$25,951,178	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Partial and Full Capacity Operations

The Pascagoula marine terminal’s partial capacity operations, which commences in 2015, will require the same number of employees in the same job roles as it will in its full capacity operation mode. Operations at the terminal will bring direct economic benefits to the Pascagoula MSA economy through the people employed at the location; however, the economic impacts do not end with the direct effects—the terminal will also produce a ripple effect in the MSA’s economy as a result of the linkages that occur between its activities, suppliers of goods and services (indirect effect), and employee spending (induced effect).

Using DOE estimates, SRRI calculated annual average full-time equivalent (FTE) employment from 2015 to 2021 to determine the potential economic impacts of the terminal’s partial and full capacity operations. Only one impact was completed for the marine terminal’s partial and full capacity operations as job types and levels remain consistent through both phases; therefore, annual operations impacts will be similar.

Strategic Petroleum Reserve Expansion Partial and Full Capacity Operations Assumptions for the Pascagoula MSA:

- The Pascagoula terminal will have a total of 40 people employed per year from 2015 to 2019 (partial capacity operations) and 2020 onward (full capacity operations) within the areas of security and operations.

Overall, as shown in Figure 13 (on the following page), the Pascagoula marine terminal’s partial and full operations could contribute nearly 80 jobs and \$21 million of output to the Pascagoula MSA’s economy on an annual basis including direct, indirect, and induced benefits. The facility directly supports 40 jobs and over \$14 million of output, but due to the indirect and induced benefits, the Pascagoula MSA could gain an additional 40 jobs and approximate \$7 million of output. The

multiplier effect shows that, on average, for every employee or dollar of output the terminal supports in the Pascagoula MSA as a result of its operations, the MSA’s economy could gain one additional job or 50 cents, respectively.

Potential impacts of Strategic Petroleum Reserve expansion partial capacity operations on the Pascagoula MSA’s economy:

- ✓ **80 jobs**
- ✓ **\$21 million output**
- ✓ **\$8 million value added**
- ✓ **\$3 million employee compensation**

PASCAGOULA MSA IMPACTS

FIGURE 13
TOTAL ANNUAL AVERAGE ECONOMIC IMPACTS
OF PARTIAL AND FULL CAPACITY OPERATIONS ON
THE PASCAGOULA MSA

<i>Impact</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Employment	40	19	19	78
Output	\$14,240,470	\$5,053,825	\$1,922,675	\$21,216,970
Value Added	\$5,815,794	\$1,020,477	\$1,208,152	\$8,044,423
Employee Compensation	\$1,542,206	\$599,310	\$496,883	\$2,638,399

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Additionally, on an annual basis, the marine terminal's operations could generate about \$8 million in total added value (including direct, indirect, and induced effects), reflecting the amount of output produced over and above the cost of inputs, and nearly \$3 million in total employee compensation (including salary and benefits), equating to about \$34,000 per employee.

PASCAGOULA MSA IMPACTS

As shown in Figure 14, the Pascagoula MSA's Administrative & Waste Services; Transportation & Warehousing; and Retail Trade sectors could benefit the most from the total employment impacts produced by the Pascagoula marine terminal's operations in the expansion plan, combined accounting for around 67 percent of the total employment impacts. The Administrative & Waste Services; Professional, Scientific & Technical Services and Construction sectors could experience the largest indirect job gains as a result of their role as linked and service-providing sectors to the marine terminal. The largest induced impacts could be generated in the Retail Trade; Accommodation & Food Services; and Health & Social Services sectors due to the direct and indirect employees' spending activities.

FIGURE 14
MAJOR SECTOR ANNUAL AVERAGE EMPLOYMENT IMPACTS
FROM PARTIAL AND FULL CAPACITY OPERATIONS ON THE
PASCAGOULA MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Administrative & Waste Services	20	4	0	25	31.7%
Transportation & Warehousing	20	2	0	22	28.2%
Retail Trade	0	1	5	6	7.2%
Professional, Scientific & Technical Services	0	4	1	5	6.2%
Accommodation & Food Services	0	1	4	4	5.4%
Construction	0	4	0	4	5.3%
Health & Social Services	0	0	3	3	4.2%
Other Services	0	1	2	3	3.2%
Real Estate & Rental	0	1	1	2	2.1%
Finance & Insurance	0	1	1	2	1.9%
Manufacturing	0	1	0	1	0.9%
Government	0	0	1	1	0.9%
Information	0	0	0	1	0.8%
Wholesale Trade	0	0	0	1	0.6%
Utilities	0	0	0	0	0.5%
Educational Services	0	0	0	0	0.5%
Agriculture, Forestry, Fishing & Hunting	0	0	0	0	0.3%
Arts, Entertainment & Recreation	0	0	0	0	0.3%
Mining	0	0	0	0	0.0%
Management of Companies	0	0	0	0	0.0%
Total	40	19	19	78	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

PASCAGOULA MSA IMPACTS

The Transportation & Warehousing; Manufacturing; and Administrative & Waste Services sectors could account for about 86 percent of the Pascagoula MSA's total output impacts resulting from the marine terminal's partial and full capacity operations (Figure 15). The largest indirect gains could be seen in the Manufacturing; Professional, Scientific & Technical Services; and Construction sectors because of their linkages to the terminal's activities. Government; Retail Trade; and Health & Social Services could see the greatest induced output benefits, demonstrating the demand for goods and services from these sectors that are generated by spending activity from the direct and indirect sector employees.

FIGURE 15
MAJOR SECTOR ANNUAL AVERAGE OUTPUT IMPACTS FROM PARTIAL AND FULL CAPACITY OPERATIONS ON THE PASCAGOULA MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Transportation & Warehousing	\$13,595,625	\$114,203	\$38,813	\$13,748,641	64.8%
Manufacturing	\$0	\$3,538,871	\$104,239	\$3,643,110	17.2%
Administrative & Waste Services	\$644,845	\$204,629	\$17,412	\$866,886	4.1%
Government	\$0	\$20,397	\$485,708	\$506,105	2.4%
Professional, Scientific & Technical Services	\$0	\$423,266	\$55,275	\$478,541	2.3%
Retail Trade	\$0	\$40,810	\$313,305	\$354,115	1.7%
Construction	\$0	\$240,689	\$13,236	\$253,925	1.2%
Health & Social Services	\$0	\$8	\$246,742	\$246,750	1.2%
Finance & Insurance	\$0	\$109,650	\$134,878	\$244,528	1.2%
Accommodation & Food Services	\$0	\$24,505	\$177,166	\$201,671	1.0%
Real Estate & Rental	\$0	\$94,032	\$81,870	\$175,902	0.8%
Utilities	\$0	\$76,547	\$67,294	\$143,841	0.7%
Information	\$0	\$64,668	\$57,474	\$122,142	0.6%
Other Services	\$0	\$49,086	\$71,306	\$120,392	0.6%
Wholesale Trade	\$0	\$35,789	\$25,148	\$60,937	0.3%
Arts, Entertainment & Recreation	\$0	\$610	\$11,165	\$11,775	0.1%
Educational Services	\$0	\$151	\$10,834	\$10,985	0.1%
Mining	\$0	\$10,686	\$218	\$10,904	0.1%
Agriculture, Forestry, Fishing & Hunting	\$0	\$1,411	\$8,690	\$10,101	0.0%
Management of Companies	\$0	\$3,817	\$1,902	\$5,719	0.0%
Total	\$14,240,470	\$5,053,825	\$1,922,675	\$21,216,970	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

McComb MSA Economic Impacts

Under the Strategic Petroleum Reserve expansion plan, the Liberty Station pipeline terminal will be built within the McComb MSA, consisting of Amite and Pike Counties.

Construction

The jobs and output supported by construction of the Liberty Station pipeline terminal will provide a direct, short-term boost to the McComb MSA as well as create a ripple effect in the economy through the suppliers of goods and services (indirect effects) and induced effects such as employee spending. Once construction is complete, however, the associated direct economic effects will end.

In order to quantify the full range of economic impacts of the Liberty Station construction, SRRI used cost estimates from the DOE Petroleum Reserves program to develop assumptions for the pipeline terminal construction activity, which will primarily take place from 2010 through 2014. The annual average costs during this time period were calculated to determine the potential total annual economic impact of the expansion plans' construction on the McComb MSA economy.

Strategic Petroleum Reserve Expansion Construction Assumptions for the McComb MSA:

- Liberty Station is estimated to have an annual average construction cost of \$6,010,000 from 2010 to 2014
- Total construction labor costs are separated out from the costs outlined above. On average and spread through 2010 to 2014, total construction labor costs for Liberty Station amount to approximately \$7,982,000 per year.

Overall, construction costs total around \$13,992,000 on an annual average basis during the 2010-2014 period, based on DOE cost estimates.

Construction of the Liberty Station terminal in the McComb MSA could generate a total of close to 200 jobs and \$19 million of output in the MSA's economy as shown in Figure 16. Construction of the terminal directly supports 140 jobs and nearly \$14 million of output, but due to the indirect and induced benefits, the McComb MSA could gain an additional 55 jobs and approximate \$5 million of output. Additional economic benefits could result in the form of added value and employee compensation totaling \$8 million and \$4 million, respectively.

Potential short-term impacts of the Strategic Petroleum Reserve expansion construction on the McComb MSA's economy:

- ✓ **200 jobs**
- ✓ **\$19 million output**
- ✓ **\$8 million value added**
- ✓ **\$4 million employee compensation**

FIGURE 16
TOTAL ANNUAL AVERAGE ECONOMIC IMPACTS OF
FACILITIES CONSTRUCTION ON THE MCCOMB MSA

<i>Impact</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Employment	140	25	30	196
Output	\$13,991,528	\$2,278,643	\$2,465,150	\$18,735,321
Value Added	\$5,267,140	\$1,137,834	\$1,519,175	\$7,924,149
Employee Compensation	\$3,225,013	\$642,584	\$630,020	\$4,497,617

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

MCCOMB MSA IMPACTS

Figure 17 shows that the Construction; Retail Trade; and Professional, Scientific & Technical Services sectors, as presented in Figure 17, could see the greatest employment impacts from the Liberty Station construction detailed under the Strategic Petroleum Reserve expansion plan. These sectors combined could account for approximately 82 percent of the total employment impacts in the McComb MSA. The Professional, Scientific & Technical Services; Retail Trade; and Transportation & Warehousing sectors could experience the greatest indirect employment impacts because of their function as suppliers of goods and services to the expansion construction activities. The largest induced benefits could be seen in the Retail Trade; Health & Social Services; and Accommodation & Food Services sectors as a result of the direct and indirect employees' spending patterns.

FIGURE 17
MAJOR SECTOR ANNUAL AVERAGE EMPLOYMENT IMPACTS
FROM FACILITIES CONSTRUCTION ON THE MCCOMB MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Construction	140	0	0	141	71.8%
Retail Trade	0	4	8	11	5.8%
Professional, Scientific & Technical Services	0	8	1	8	4.2%
Health & Social Services	0	0	5	5	2.7%
Accommodation & Food Services	0	1	4	5	2.6%
Other Services	0	2	3	5	2.3%
Transportation & Warehousing	0	3	1	4	1.9%
Wholesale Trade	0	2	1	3	1.7%
Administrative & Waste Services	0	2	1	3	1.3%
Agriculture, Forestry, Fishing & Hunting	0	0	2	2	1.1%
Finance & Insurance	0	1	1	2	1.1%
Real Estate & Rental	0	1	1	2	1.0%
Manufacturing	0	1	1	1	0.7%
Arts, Entertainment & Recreation	0	0	1	1	0.7%
Information	0	0	0	1	0.3%
Educational Services	0	0	0	0	0.2%
Utilities	0	0	0	0	0.2%
Management of Companies	0	0	0	0	0.2%
Government	0	0	0	0	0.2%
Mining	0	0	0	0	0.1%
Total	140	25	30	196	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

MCCOMB MSA IMPACTS

About 82 percent of total output impacts from the Liberty Station construction could be accounted for in the McComb MSA's Construction; Professional, Scientific & Technical Services; and Retail Trade sectors, as shown in Figure 18. Due to their role as providers of goods and services supporting the construction activities, the largest indirect gains could be seen in the McComb MSA's Professional, Scientific, & Technical Services; Transportation & Warehousing; and Wholesale Trade sectors. Government; Retail Trade; and Health & Social Services could experience the largest induced output impacts resulting from the consumption activities of the direct and indirect sector employees.

FIGURE 18
MAJOR SECTOR ANNUAL AVERAGE OUTPUT IMPACTS FROM FACILITIES
CONSTRUCTION ON THE MCCOMB MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Construction	\$13,991,528	\$21,481	\$12,159	\$14,025,168	74.9%
Professional, Scientific & Technical Services	\$0	\$671,380	\$53,720	\$725,100	3.9%
Retail Trade	\$0	\$204,401	\$444,937	\$649,338	3.5%
Government	\$0	\$18,126	\$534,894	\$553,020	3.0%
Wholesale Trade	\$0	\$273,115	\$148,469	\$421,584	2.3%
Transportation & Warehousing	\$0	\$325,308	\$68,299	\$393,607	2.1%
Health & Social Services	\$0	\$91	\$358,648	\$358,739	1.9%
Finance & Insurance	\$0	\$142,939	\$125,689	\$268,628	1.4%
Accommodation & Food Services	\$0	\$31,275	\$186,216	\$217,491	1.2%
Real Estate & Rental	\$0	\$124,550	\$81,622	\$206,172	1.1%
Other Services	\$0	\$109,174	\$92,930	\$202,104	1.1%
Manufacturing	\$0	\$83,165	\$118,499	\$201,664	1.1%
Information	\$0	\$82,428	\$68,452	\$150,880	0.8%
Administrative & Waste Services	\$0	\$77,433	\$21,298	\$98,731	0.5%
Utilities	\$0	\$18,609	\$54,275	\$72,884	0.4%
Mining	\$0	\$54,858	\$12,807	\$67,665	0.4%
Management of Companies	\$0	\$24,803	\$18,283	\$43,086	0.2%
Arts, Entertainment & Recreation	\$0	\$5,403	\$32,783	\$38,186	0.2%
Agriculture, Forestry, Fishing & Hunting	\$0	\$10,097	\$19,856	\$29,953	0.2%
Educational Services	\$0	\$7	\$11,314	\$11,321	0.1%
Total	\$13,991,528	\$2,278,643	\$2,465,150	\$18,735,321	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Partial and Full Capacity Operations

Similar to the Pascagoula marine terminal, partial capacity operations at the Liberty Station pipeline terminal, which also commences in 2015, will require the same number of employees in the same job roles as it will in its full capacity operation mode. The McComb MSA economy will benefit from the jobs that directly support Liberty Station's operations, but, through the ripple effect, will also experience indirect and induced benefits through the linkages that occur between the terminal's activities and suppliers of goods and services in addition to the direct and indirect employees' spending.

Using DOE estimates, SRRI calculated annual average full-time equivalent (FTE) employment from 2015 to 2021 to determine the potential economic impacts of the terminal's partial and full capacity operations. Only one impact was completed for the pipeline terminal's partial and full capacity operations as job types and levels remain consistent through both phases; therefore, annual operations impacts will be similar.

Strategic Petroleum Reserve Expansion Partial and Full Capacity Operations Assumptions for the McComb MSA:

- Liberty Station will have a total of 40 people employed per year from 2015 to 2019 (partial capacity operations) and 2020 onward (full capacity operations) within the areas of security and operations.

Figure 19, on the following page, shows that, overall, Liberty Station's partial and full capacity operations could contribute about 80 jobs and \$17 million of output to the McComb MSA's economy on an annual basis including direct, indirect, and induced benefits. The terminal directly supports 40 jobs and nearly \$13 million of output, but due to the indirect and induced benefits, the McComb MSA could gain an additional 40 jobs and nearly \$5 million of output. The multiplier effect shows that, on average, for every employee or dollar of output Liberty Station supports in the McComb MSA as a result of its operations, the economy could gain an additional 1.1 jobs or 40 cents, respectively.

Potential impacts of Strategic Petroleum Reserve expansion partial capacity operations on the McComb MSA's economy:

- ✓ **80 jobs**
- ✓ **\$17 million output**
- ✓ **\$6 million value added**
- ✓ **\$3 million employee compensation**

MCCOMB MSA IMPACTS

FIGURE 19
TOTAL ANNUAL AVERAGE ECONOMIC IMPACTS
OF PARTIAL AND FULL CAPACITY OPERATIONS ON
THE MCCOMB MSA

<i>Impact</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Employment	40	25	19	84
Output	\$12,883,448	\$3,012,347	\$1,528,248	\$17,424,043
Value Added	\$3,698,498	\$1,762,589	\$941,515	\$6,402,602
Employee Compensation	\$1,952,782	\$589,586	\$390,509	\$2,932,877

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

Additionally, the operations of the Liberty Station terminal could generate about \$6 million in total added value (including direct, indirect, and induced effects) on an annual average basis, reflecting the amount of output produced over and above the cost of inputs. Approximately \$3 million in total employee compensation (including salary and benefits) could also result from the direct, indirect, and induced impacts of the terminal's partial and full capacity operations on an annual basis—equating to about \$35,000 per employee, which ultimately affects spending, investment, and savings patterns.

MCCOMB MSA IMPACTS

Operations of the Liberty Station terminal could generate the greatest benefits in the McComb MSA's Administrative & Waste Services; Transportation & Warehousing; and Retail Trade sectors, combined accounting for about 64 percent of the total employment impacts, as shown in Figure 20. Due to their role as linked and supplier industries to the Liberty Station operations, the Administrative & Waste Services; Construction; and Professional, Scientific & Technical Services sectors could experience the largest indirect job gains while the largest induced impacts could be generated in the Retail Trade; Health & Social Services; and Accommodation & Food Services sectors as a result of the direct and indirect employees' consumption activities.

FIGURE 20
MAJOR SECTOR ANNUAL AVERAGE EMPLOYMENT IMPACTS
FROM PARTIAL AND FULL CAPACITY OPERATIONS ON THE
MCCOMB MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Administrative & Waste Services	20	5	0	25	30.3%
Transportation & Warehousing	20	2	1	23	27.1%
Retail Trade	0	1	5	6	6.9%
Construction	0	5	0	5	5.8%
Professional, Scientific & Technical Services	0	4	0	5	5.6%
Health & Social Services	0	0	3	3	3.9%
Accommodation & Food Services	0	1	3	3	3.8%
Mining	0	3	0	3	3.3%
Other Services	0	1	2	3	3.0%
Wholesale Trade	0	1	1	2	2.1%
Finance & Insurance	0	1	1	1	1.7%
Agriculture, Forestry, Fishing & Hunting	0	0	1	1	1.4%
Real Estate & Rental	0	1	1	1	1.4%
Arts, Entertainment & Recreation	0	0	1	1	1.0%
Manufacturing	0	0	1	1	0.7%
Information	0	0	0	1	0.6%
Utilities	0	0	0	0	0.5%
Management of Companies	0	0	0	0	0.4%
Educational Services	0	0	0	0	0.2%
Government	0	0	0	0	0.2%
Total	40	25	19	84	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.

MCCOMB MSA IMPACTS

Figure 21 shows that the Transportation & Warehousing; Mining; and Administrative & Waste Services sectors could account for nearly 84 percent of the McComb MSA's total output impacts resulting from Liberty Station's operations on an annual basis. The largest indirect output gains could be seen in the Mining; Professional, Scientific & Technical Services; and Construction sectors because of their linkages to the terminal's activities. Government; Retail Trade; and Health & Social Services could see the greatest induced output benefits, demonstrating the demand for goods and services from these sectors that are generated by spending activity from the direct and indirect sector employees.

FIGURE 21
MAJOR SECTOR ANNUAL AVERAGE OUTPUT IMPACTS FROM PARTIAL AND FULL CAPACITY OPERATIONS ON THE MCCOMB MSA

<i>Industry</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>	<i>% Total</i>
Transportation & Warehousing	\$12,352,694	\$195,187	\$43,166	\$12,591,047	72.3%
Mining	\$0	\$1,247,534	\$7,807	\$1,255,341	7.2%
Administrative & Waste Services	\$530,754	\$185,649	\$13,152	\$729,555	4.2%
Professional, Scientific & Technical Services	\$0	\$524,553	\$33,242	\$557,795	3.2%
Government	\$0	\$12,933	\$331,552	\$344,485	2.0%
Retail Trade	\$0	\$52,720	\$275,793	\$328,513	1.9%
Construction	\$0	\$255,288	\$7,544	\$262,832	1.5%
Wholesale Trade	\$0	\$137,691	\$91,907	\$229,598	1.3%
Health & Social Services	\$0	\$22	\$222,344	\$222,366	1.3%
Finance & Insurance	\$0	\$95,506	\$77,810	\$173,316	1.0%
Accommodation & Food Services	\$0	\$19,653	\$115,419	\$135,072	0.8%
Real Estate & Rental	\$0	\$72,827	\$50,532	\$123,359	0.7%
Other Services	\$0	\$52,888	\$57,566	\$110,454	0.6%
Information	\$0	\$63,897	\$42,388	\$106,285	0.6%
Manufacturing	\$0	\$18,722	\$73,455	\$92,177	0.5%
Utilities	\$0	\$49,198	\$33,598	\$82,796	0.5%
Management of Companies	\$0	\$22,231	\$11,329	\$33,560	0.2%
Arts, Entertainment & Recreation	\$0	\$3,564	\$20,322	\$23,886	0.1%
Agriculture, Forestry, Fishing & Hunting	\$0	\$2,273	\$12,309	\$14,582	0.1%
Educational Services	\$0	\$11	\$7,013	\$7,024	0.0%
Total	\$12,883,448	\$3,012,347	\$1,528,248	\$17,424,043	-

Sacramento Regional Research Institute, April 2008

Data Source: IMPLAN, 2006 Coefficients and dollars based on stated assumptions

Note: Differences due to rounding.